Yan-Fu Kuo

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National Taiwan University
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Taipei 10617, Taiwan

RESEARCH AREAS AND EXPERTISE

General area: Agricultural Automation
Specific area: Machine Vision for Automation

EDUCATION

Purdue University *2005 – 2011*
Ph.D. in Mechanical Engineering West Lafayette, IN, USA

Purdue University *2003 – 2005*
M.S. in Mechanical Engineering West Lafayette, IN, USA

National Taiwan University *1994 – 1998*
B.S. in Agricultural Machinery Engineering Taipei, Taiwan

PROFESSIONAL EXPERIENCE

National Taiwan University *2025 – present*
Distinguished Professor, Department of Biomechatronics Engineering

National Taiwan University *2020 – 2025*
Professor, Department of Biomechatronics Engineering

National Taiwan University *2016 – 2020*
Associate Professor, Department of Biomechatronics Engineering

National Taiwan University *2011 – 2016*
Assistant Professor, Department of Biomechatronics Engineering

Purdue University *2003 – 2011*
Graduate Research Assistant, Department of Mechanical Engineering

Hewlett-Packard Corporation, USA *2007 & 2008*
Intern Researcher

National Taiwan University *2000 – 2002*
Research Assistant, Department of Biomechatronics Engineering

AWARDS AND RECOGNITION

Outstanding Associate Editor *Journal of the ASABE, 2025*
Excelsior Scholar Fellowship *College of Bioresources & Agriculture, NTU, 2023*
Associate Editor *Journal of the ASABE, 2022-*
Outstanding Teaching Award *National Taiwan University, 2022*
Associate Editor *Computers and Electronics in Agriculture, 2021-2022*
First Place *2021 CTCI Foundation AI Innovation Competition, 2021*
Excellent Teaching Award *National Taiwan University, 2021*
Invited Participant *CIGR Next Generation Leaders Event, 2019*
Certificate of Excellence in Reviewing *Computers and Electronics in Agriculture, 2017*

Outstanding Teaching Award *National Taiwan University, 2015*
Excellent Teaching Award *National Taiwan University, 2014*
Excellent Teaching Award *National Taiwan University, 2013*
Best Paper Award *Journal of Agricultural Machinery, 2004*

INVITED TALKS (English only)

"**The recent applications of AI in fisheries and aquaculture in Taiwan**" at the 11th Fisheries Scientific Conference, September 24, 2025, Quezon, Philippines, September 25, 2025. (resource speaker)

"**AI in agriculture — from disease identification to question answering — using tomato as an example**" at the TARI-NARO-AARDO-FFTC Workshop Unlocking Agrifood Innovation: From Sensors to Smart Farms, Taipei, Taiwan, September 1, 2025.

"**AI in agriculture — from disease identification to question answering — using tomato as an example**" at the 7th International Workshop on Machine Learning for Cyber-Agricultural Systems (MLCAS2025), Tokyo, Japan, August 5, 2025.

"**Automated identification of tomato pests using AI – a case study**" at the 2025 International Symposium on Novel Control Technologies of Crop Pests and Diseases and Application of Insect Resource, Taichung, Taiwan, June 25, 2025.

"**Digital flower phenotyping using machine vision on Gloxinia (*Sinningia speciosa*)**" at the Taiwan-Netherlands Symposium on Protected Horticulture and Phenotyping Applications, Taichung, Taiwan, May 13, 2025.

"**The recent applications of AI in agriculture in Taiwan**" at the NTU-SNU Workshop on Smart Farm, Seoul, Korea, February 11, 2025.

"**Identifying tomato diseases, pests, and disorders by using AI machine vision**" at the WTO SPS Thematic Session on Emerging Risks and New Agricultural Technologies to Address Them, Virtual Meeting, November 11, 2024.

"**AI for agriculture — the fundamentals**" at the Workshop on AI in Agrotechnology, Miami, USA, September 3, 2024.

"**AI applications in agriculture: the current status and future — using Taiwan as an example**" at the Workshop on AI in Agrotechnology, Miami, USA, September 2, 2024.

"**The applications of AI in agriculture in Taiwan — the current status and future**" at the 6th CIGR International Conference 2024, Jeju, South Korea, May 21, 2024. (keynote speaker)

"**Application of smart machine vision in animal husbandry**" at the 16th International Workshop on Nondestructive Quality Evaluation of Agricultural, Livestock and Fishery Products, Taipei, Taiwan, November 7, 2023.

"**Application of smart machine vision in aquaculture and animal husbandry**" at the Tsukuba Conference 2023, Tsukuba, Japan, September 27, 2023.

"**Identifying tomato diseases and pests using intelligent machine vision**", at the 2022 International Workshop on Applied Computing in Agriculture, Virtual Meeting, March 4-5, 2022.

"**Identifying tomato diseases and pests using intelligent machine vision**" at the Tsukuba Conference 2021, Virtual Meeting, September 30, 2021.

"**Identifying tomato diseases and pests using intelligent machine vision**" at the NARO-FFTC Conference 2021, Virtual Meeting, September 3, 2021.

"**Measuring the length and identifying the species of dewatered fish and measuring the length of shrimps in vivo using intelligent machine vision**" at the APEC Workshop on the R&D and Promotion of Smart Agriculture, Virtual Meeting, November 23-24, 2020.

"**Fish species identification and body length estimation**" at the 14th International Workshop on Nondestructive Quality Evaluation of Agricultural, Livestock and Fishery Products, Taipei, Taiwan, November 6, 2018.

"**Intelligent sensing technology and information sharing platform of agriculture**" at the Modern Engineering and Technology Seminar, Taipei, Taiwan, October 23, 2018.

"**3D phenotyping – quantifying floral shape variation in an F2 cross of *Sinnigia Speciosa***" at the 12th International Workshop on Nondestructive Quality Evaluation of Agricultural, Livestock and Fishery Products, Taipei, Taiwan, November 8, 2016.

"**Detecting Bakanae disease on rice seedlings using machine vision**" at the 10th International Workshop on Nondestructive Quality Evaluation of Agricultural, Livestock and Fishery Products, Taipei, Taiwan, November 25, 2014.

"**Measuring surface lipid content and observing bran residue patterns of milled rice using hyperspectral imaging**" at the 9th International Workshop on Nondestructive Quality Evaluation of Agricultural, Livestock and Fishery Products, Taipei, Taiwan, November 19, 2013.

PATENTS

Kuo, Y. F., Lin, C. Y., Nien, S. Y., Ho, K. Y., Huang, M. H. (2020) Automatic monitoring system for poultry or livestock behavior and automatic monitoring method thereof. Taiwan Patent 202032489.

Kuo, Y. F., Tung, C. & Hsieh, T. L. (2019) Automatic fishery and prey identification and recording system. Taiwan Patent I658789.

Kuo, Y. F., Yang, C. L., Chiu, G. T. C., Yih, Y., & Allebach, J. P., & Abramsohn, D. A. (2015) Tone reproduction curve error reduction. US Patent 9014578 B2.

Kuo, Y. F. (2012) Improved capsule filler. Taiwan Patent M429474.

FUNDED PROJECTS

1. **Kuo, Y. F.** (PI). 2025. Plant disease diagnosis report copilot system for plant doctor using machine vision models and large language model – a case study on Solanaceae and Cucurbits. National Science and Technology Council, Taiwan, NSTC 114-2313-B-002-030.
2. **Kuo, Y. F.** (PI). 2025. Phenotypic and genomic investigation and breeding strategy validation of red-feather native chickens. Ministry of Agriculture, Taiwan, 114AS-17.3.3-AD-01.
3. **Kuo, Y. F.** (PI). 2025. Developing an automatic farmer service system using deep learning computer vision and large language models – a preliminary study. Ministry of Agriculture, Taiwan, 114AS-10.1.3-AS-01.
4. **Kuo, Y. F.** (PI). 2025. The Development of detecting defect carcasses removal system and laser marking system for native chickens. Ministry of Agriculture, Taiwan, 114FI-19.1.2-AD-02.
5. **Kuo, Y. F.** (co-PI). 2025. Development of digital phenotyping techniques and establishment of selection indicators in rice. Ministry of Agriculture, Taiwan, 114AS-17.3.1-AS-01.
6. **Kuo, Y. F.** (PI). 2024. The development of detecting defect carcasses removal system and laser marking system for native chickens. Ministry of Agriculture, Taiwan, 113FI-17.1.2-AD-03.
7. **Kuo, Y. F.** (PI). 2024. Monitoring chicken growth with a rail-based overhead surveillance vehicle using machine vision and artificial intelligence. Ministry of Agriculture, Taiwan, 113FI-17.1.2-AD-01.
8. **Kuo, Y. F.** (PI). 2023. Monitoring chicken growth with a rail-based overhead surveillance vehicle using machine vision and artificial intelligence. Council of Agriculture, Taiwan, 112-17.1.2-AD-U1.
9. **Kuo, Y. F.** (PI). 2023. The development and application of detecting carcass defections for native chickens using machine vision. Council of Agriculture, Taiwan, 112-17.1.2-AD-U2.
10. **Kuo, Y. F.** (PI). 2022. The development of automatic system for identifying tomato leaf diseases, pests, and physiological disorders. National Science and Technology Council, Taiwan, NSTC 111-2313-B-002-051-MY3.

11. **Kuo, Y. F.** (PI). 2022. Identifying economic wood species in Taiwan using deep learning and cloud platform. Forestry Bureau, Council of Agriculture, Taiwan, tfbk-1110503.
12. **Kuo, Y. F.** (PI). 2022. Monitoring chicken growth using machine vision and artificial intelligence. Council of Agriculture, Taiwan, 111AS-8.2.9-AD-U1.
13. **Kuo, Y. F.** (PI). 2022. Developing deep learning models and cloud services to identify legally regulated valuable woods and economically important tree species in Taiwan using images of wood cross-section. Jade Picking Project, National Taiwan University, Taiwan, 111L7212.
14. Chung, C. L., Liu, L. Y., **Kuo, Y. F.**, Lai, Q.-J., (Co-PI). 2022. Development of a disease alert and fungicide advisory system for strawberries. Council of Agriculture, Taiwan, 111AS-8.3.2-ST-a2.
15. Shiao, J. C., **Kuo, Y. F.** (Co-PI). 2022. The study on the age composition of southern bluefin tuna caught by Taiwanese longliner. Fishery Agency, Council of Agriculture, Taiwan, 110AS-6.1.1-FA-F2.
16. **Kuo, Y. F.** (PI). 2021. Developing deep learning models and cloud services to identify legally regulated valuable woods and economically important tree species in Taiwan using images of wood cross-section. Jade Picking Project, National Taiwan University, Taiwan, 110L7237.
17. Chu, Y. N., Liou, C. H., **Kuo, Y. F.** (Co-PI). 2021. Development and field test of the smart feeding and sludge removing systems for shrimp ponds. National Science and Technology Council, Taiwan, NSTC 110-2321-B-002-022.
18. **Kuo, Y. F.** (PI). 2021. Monitoring chicken growth using machine vision and artificial intelligence. Council of Agriculture, Taiwan, 110AS-8.2.9-AD-U1.
19. **Kuo, Y. F.** (PI). 2020. The development of management system for fish species identification. Fishery Agency, Council of Agriculture, Taiwan, 109AS-11.2.7-FA-F1.
20. **Kuo, Y. F.** (PI). 2020. Monitoring chicken growth using intelligent machine vision system. Council of Agriculture, Taiwan, 109AS-11.2.9-AD-U1.
21. **Kuo, Y. F.** (PI). 2020. Improving the management of swine houses using intelligent technologies. Council of Agriculture, Taiwan, 109AS-11.3.2-ST-a1.
22. **Kuo, Y. F.** (PI). 2019. The development of management system for fish species identification. Fishery Agency, Council of Agriculture, Taiwan, 108AS-13.2.7-FA-F1.
23. **Kuo, Y. F.** (PI). 2019. Improving management of chicken house using artificial intelligence. Council of Agriculture, Taiwan, 108AS-13.2.11-ST-a3.
24. Chu, Y. N., Liou, C. H., Liao, K C., **Kuo, Y. F.** (Co-PI). 2019. Development and field test of a smart, super-intensive shrimp production system. Council of Agriculture, Taiwan, 108AS-1.2.6-ST-a8.
25. **Kuo, Y. F.** (PI). 2018-2021. Identifying species in families Fagaceae and Lauraceae using leaf images, machine learning, and deep learning. National Science and Technology Council, Taiwan, NSTC 107-2313-B-002-013-MY3.
26. Lin. T. T., Lin, C. H., Hung, C. L., **Kuo, Y. F.**, & Wu, C. C. (Co-PI). 2018-2021. Applications of intelligent technology on crop disease and pest management. National Science and Technology Council, Taiwan, NSTC 107-2321-B-002-061, NSTC 108-2321-B-002-025, NSTC 109-2321-B-002-051.
27. **Kuo, Y. F.** (PI). 2018. The development of management system for fish species identification. Fishery Agency, Council of Agriculture, Taiwan, 107AS-14.2.7-FA-F1.
28. Lin, T. T., Young, C. W., Huang, C. K., Chen, S. F., **Kuo, Y. F.**, Tsai, Y. C., Chang, C. L., & Chiu, Y. C. (Co-PI). 2018. Research and development of intelligent biosensing platform and its agricultural applications. Council of Agriculture, Taiwan, 107AS-14.2.11-ST-a1.
29. Chu, Y. N., Liou, C. H., Liao, K C., **Kuo, Y. F.** (Co-PI). 2018. Development and field test of a smart, super-intensive shrimp production system. Council of Agriculture, Taiwan, 107AS-1.2.5-ST-a8.
30. **Kuo, Y. F.** (PI). 2017. The development of management system for fish species identification. Fishery Agency, Council of Agriculture, Taiwan, 106AS-18.1.7-FA-F1.

31. Lin, T. T., Young, C. W., Huang, C. K., Chen, S. F., **Kuo, Y. F.**, Tsai, Y. C., Chang, C. L., & Chiu, Y. C. (Co-PI). 2017. Research and development of intelligent biosensing platform and its agricultural applications. Council of Agriculture, Taiwan, 106AS-18.2.1-ST-a1.
32. Hsieh, C. L., **Kuo, Y. F.** (Co-PI). 2016. Development and application of automation for fish species identification System. Fishery Agency, Council of Agriculture, Taiwan, 105AS-11.1.1-FA-F3.
33. **Kuo, Y. F.** (PI). 2015-2018. Machine-vision-based quantitative phenotyping and genome-wide association study on rice seeds and seedlings of diverse cultivars. National Science and Technology Council, Taiwan, NSTC 104-2311-B-002-019-MY3.
34. **Kuo, Y. F.** (PI). 2012-2015. Three-dimensional modeling and geometric morphometrics to study shape variation of flower. National Science and Technology Council, Taiwan, NSTC 101-2313-B-002-050-MY3.

PUBLICATIONS (English only)

Peer-reviewed Journal Articles

1. Nakaguchi, V. M., Liu, Z., Abeyrathna, R. M. R. D., **Kuo, Y. F.**, Genkawa, T., & Ahamed, T.* (2026). A thermal machine vision sensing system for quality assurance of quail eggs – freshness assessment and grading. *Computers and Electronics in Agriculture*, 240, 111189.
2. Nakaguchi, V. M., Minn, A., Abeyrathna, R. M. R. D., **Kuo, Y. F.**, & Ahamed, T.* (2025). On-the-cage robotic retrieval system using machine vision for digital management of quail egg production. *Smart Agricultural Technology*, 12, 101417.
3. Yeh, Y. H., Chen, B. L., Hsieh, K. Y., Huang, M. H., & **Kuo, Y. F.*** (2025). Designing an autonomous robot for monitoring open-mouth behavior of chickens in commercial chicken farms. *Journal of the ASABE*, 68(1), 25-36.
4. Tsai, Y. J., Huang, Y. C., Lin, E. C., Lai, S. C., Hong, X. C., Tsai, J., Chiang C. E., & **Kuo, Y. F.*** (2024). Monitoring the lactation-related behaviors of sows and their piglets in farrowing crates using deep learning. *Frontiers in Animal Science*, 5, 1431285.
5. Ma, T. H., Chang, Y. J., Shiao, J. C., Jin, C. B., & **Kuo, Y. F.*** (2024). Enhancing machine learning-based age estimation for Pacific bluefin tuna: An approach with data imputation and image augmentation strategies. *Fisheries Research*, 274, 106992.
6. Chen, B. L., Cheng, T. H., Huang, Y. C., Hsieh, Y. L., Hsu, H. C., Lu, C. Y., M. H., Nien, S. Y., & **Kuo, Y. F.*** (2023). Developing an automatic warning system for anomalous chicken dispersion and movement using deep learning and machine learning. *Poultry Science*, 103040.
7. Cheng, H. H., Dai, Y. L., Lin, Y., Hsu, H. C., Lin, C. P., Huang, J. H., Chen, S. F.*, & **Kuo, Y. F.*** (2022). Identifying tomato leaf diseases under real field conditions using convolutional neural networks and a chatbot. *Computers and Electronics in Agriculture*, 202, 107365.
8. Lai, P. C., Lin, H. Y., Lin, J. Y., Hsu, H. C., Chu, Y. N., Liou, C. H., & **Kuo, Y. F.*** (2022). Automatic measuring shrimp body length using CNN and an underwater imaging system. *Biosystems Engineering*, 221, 224-235.
9. Wu, T. Y., Yeh, K. T., Hsu, H. C., Yang, C. K., Tsai, M. J., & **Kuo, Y. F.*** (2022). Identifying Fagaceae and Lauraceae species using leaf images and convolutional neural networks. *Ecological Informatics*, 101513.
10. Lin, Y. K., Chen, S. F.*, **Kuo, Y. F.**, Liu, T. L., & Lee, S. Y. (2021). Developing a guiding and growth status monitoring system for riding-type tea plucking machine using fully convolutional networks. *Computers and Electronics in Agriculture*, *191*, 106540.
11. Ho, K. Y., Tsai, Y. J., & **Kuo, Y. F.*** (2021). Automatic monitoring of lactation frequency of sows and movement quantification of newborn piglets in farrowing houses using convolutional neural networks. *Computers and Electronics in Agriculture*, *189*, 106376.
12. Hsu, H. C., & **Kuo, Y. F.*** (2021). Nectar Guide Patterns on Developmentally Homologous Regions of the Subtribe Ligeriinae (Gesneriaceae). *Frontiers in Plant Science*, *12*, 622.

13. Lin, C. Y., Hsieh, K. W., Tsai, Y. C., & **Kuo, Y. F.*** (2020). Automatic monitoring of chicken movement and drinking time using convolutional neural networks. *Transactions of the ASABE*, *63*(6), 2029-2038.
14. Wang, Y. H., Hsu, H. C., Chou, W. C., Liang, C. H., & **Kuo, Y. F.*** (2020). Automatic identification of first-order veins and corolla contours in 3D floral images. *Frontiers in Plant Science*, *11*, 1406.
15. Hung, T. T., Hsu, H. C., & **Kuo, Y. F.*** (2020). Quantification of petal patterns and colours of genus sinningia (Gesneriaceae). *Biosystems Engineering*, *197*, 324-335.
16. Tseng, C. H., & **Kuo, Y. F.*** (2020). Detecting and counting harvested fish and identifying fish types in electronic monitoring system videos using deep convolutional neural networks. *ICES Journal of Marine Science*, *77*(4), 1367-1378.
17. Lu, Y. C., Tung, C., & **Kuo, Y. F.*** (2020). Identifying the species of harvested tuna and billfish using deep convolutional neural networks. *ICES Journal of Marine Science*, *77*(4), 1318-1329.
18. Hsu, H. C., Chou, W. C., & **Kuo, Y. F.*** (2020). 3D revelation of phenotypic variation, evolutionary allometry, and ancestral states of corolla shape: a case study of clade Corytholoma (subtribe Ligeriinae, family Gesneriaceae). *GigaScience*, *9*(1), giz155.
19. Tseng, C. H., Hsieh, C. L., & **Kuo, Y. F.*** (2020). Automatic measurement of the body length of harvested fish using convolutional neural networks. *Biosystems Engineering*, *189*, 36-47.
20. Yang, H. W., Hsu, H. C., Yang, C. K., Tsai, M. J., & **Kuo, Y. F.*** (2019). Differentiating between morphologically similar species in genus Cinnamomum (Lauraceae) using deep convolutional neural networks. *Computers and Electronics in Agriculture*, *162*, 739-748.
21. Lee, C. H., Hsu, H. C., Yang, C. K., Tsai, M. J., & **Kuo, Y. F.*** (2019). Identifying Fagaceae species in Taiwan using leaf images. *Transactions of the ASABE*, *62*(5), 1055-1063.
22. Han, T. H., & **Kuo, Y. F.*** (2018). Developing a system for three-dimensional quantification of root traits of rice seedlings. *Computers and Electronics in Agriculture*, *152*, 90-100.
23. Hsu, H. C., Hsu, K. L., Chan, C. Y., Wang, C. N., & **Kuo, Y. F.*** (2018). Quantifying colour and spot characteristics for the ventral petals in Sinningia speciosa. *Biosystems Engineering*, *167*, 40-50.
24. Hsu, H. C., Wang, C. N., Liang, C. H., Wang, C. C., & **Kuo, Y. F.*** (2017). Association between petal form variation and CYC2-like genotype in a hybrid line of Sinningia speciosa. *Frontiers in Plant Science*, *8*, 558.
25. Kuo, T. Y., Chung, C. L., Chen, S. Y., Lin, H. A., & **Kuo, Y. F.*** (2016). Identifying rice grains using image analysis and sparse-representation-based classification. *Computers and Electronics in Agriculture*, *127*, 716-725.
26. Yeh, Y. H., Chung, W. C., Liao, J. Y., Chung, C. L., **Kuo, Y. F.**, & Lin, T. T. (2016). Strawberry foliar anthracnose assessment by hyperspectral imaging. *Computers and Electronics in Agriculture*, *122*, 1-9.
27. Chung, C. L., Huang, K. J., Chen, S. Y., Lai, M. H., Chen, Y. C., & **Kuo, Y. F.*** (2016). Detecting Bakanae disease in rice seedlings by machine vision. *Computers and Electronics in Agriculture*, *121*, 404-411.
28. Wang, C. N., Hsu, H. C., Wang, C. C., Lee, T. K., & **Kuo, Y. F.*** (2015). Quantifying floral shape variation in 3D using microcomputed tomography: a case study of a hybrid line between actinomorphic and zygomorphic flowers. *Frontiers in Plant Science*, *6*, 724.
29. Hsu, H. C., Chen, C. Y., Lee, T. K., Weng, L. K., Yeh, D. M., Lin, T. T., Wang, C. N.*, & **Kuo, Y. F.*** (2015). Quantitative analysis of floral symmetry and tube dilation in an F2 cross of Sinningia speciosa. *Scientia Horticulturae*, 188, 71-77.
30. Chen, W. T., & **Kuo, Y. F.*** (2015). Measurement of residual bran distribution on milled rice using fluorescence fingerprint-derived imaging. *Food Science and Technology Research*, *21*(2), 187-192.
31. Chen, D. R., Chien, C. L., & **Kuo, Y. F.*** (2015). Computer-aided assessment of tumor grade for breast cancer in ultrasound images. *Computational and Mathematical Methods in Medicine*, *2015*.

32. Chen, W. T., & **Kuo, Y. F.*** (2014). Observation and measurement of residual bran on milled rice using hyperspectral imaging. *Cereal Chemistry*, *91*(6), 566-571.
33. Thai, C. N., **Kuo, Y. F.**, & Yen, P. L. (2013, June). Cooperative teaching in a distance education environment. In *2013 ASEE Annual Conference & Exposition* (pp. 23-341).
34. **Kuo, Y. F.***, Chiu, G. T. C., Allebach, J. P., & Sahyun, M. R. V. (2013). Calibration Color Patch Reduction and Halftone Level Selection for Electrophotography. *Journal of Imaging Science and Technology*, *57*(2), 20505-1.
35. **Kuo, Y. F.***, Yang, C. L., Yih, Y., Geleynse, C., Chiu, G., & Allebach, J. (2012). Experimental Characterization of Transient Tone Deviation in Print Jobs for Color Electrophotography. *Journal of Imaging Science and Technology*, *56*(2), 20502-1.
36. **Kuo, Y. F.***, Yang, C. L., Chiu, G. T. C., Yih, Y., Allebach, J. P., & Abramsohn, D. A. (2011). Model-based calibration approach to improve tone consistency for color Electrophotography. *Journal of Imaging Science and Technology*, *55*(6), 60505-1.
37. Yang, C. L.*, Yih, Y., **Kuo, Y. F.**, Chiu, G., & Allebach, J. (2010). Improving Tone Prediction in Calibration of Electrophotographic Printers by Linear Regression: Using Principal Components to Account for Co-Linearity of Sensor Measurements. *Journal of Imaging Science and Technology*, *54*(5), 50302-1.
38. Yang, C. L.*, Yih, Y., Ashton, G., **Kuo, Y. F.**, Chiu, G., Abramsohn, D., & Allebach, J. (2010). Improving Tone Prediction in Calibration of Electrophotographic Printers by Linear Regression: Environmental, Consumables and Tone-Level Factors. *Journal of Imaging Science and Technology*, *54*(5), 50301-1.

Conference Proceedings

1. Yen, W. F., Lin, T. C., Lin, C. P., Huang, J. H., & **Kuo, Y. F.** (2025). Identification of cucumber pests, diseases, and disorders using deep learning. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
2. Hu, Y. C., Shao, J. H., Lee, S. J., & **Kuo, Y. F.** (2025). Phalaenopsis seedling assessment using leaf contour detection with yolo. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
3. Hong, X. C., & **Kuo, Y. F.** (2025). Detecting and removing defective carcasses of taiwanese native chickens using convolutional neural networks. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
4. Yu, W. H., & **Kuo, Y. F.** (2025). Automated selection of taiwan native breeding chickens using machine vision and deep learning. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
5. Shih, Y. C., Chang, K. R., & **Kuo, Y. F.** (2025). Monitoring chicken houses with AI surveillance system. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
6. Teng, C. H., Lee, C. M., & **Kuo, Y. F.** (2025). Lauraceae timber identification using vision transformer. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
7. Chen, B. R., & **Kuo, Y. F.** (2025). Nighttime piglet detection using deep learning. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
8. Chen, Y. T., & **Kuo, Y. F.** (2025). Identification of citrus diseases, pests, and disorders using deep learning. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
9. Chen, Z. Y., & **Kuo, Y. F.** (2025). Automatic counting of chickens around feeders using convolutional neural networks. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.

10. Chen, Y. E., & **Kuo, Y. F.** (2025). Color identification and texture features of phalaenopsis using deep learning. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
11. Li, C. H., Cheng, C. H., & **Kuo, Y. F.** (2025). Dual-channel imaging and two-stage deep learning for fertility detection of duck eggs. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
12. Lai, S. C., & **Kuo, Y. F.** (2025). Applying retrieval-augmented-generation to support farmers in pest and disease diagnosis. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
13. Liu, C. C., Lin, Y., Chen, S. F., Lin, C. P., Gao, W. C., Shih, Y. F., Lin, Z. L., & **Kuo, Y. F.** (2025). Automated identification of tomato diseases, pests, and disorders using AI models and smartphone applications. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
14. Yen, Y. Z., Yang, P. C., Lee, C. M., & **Kuo, Y. F.** (2025). Automating wood species identification using deep learning and line chatbot. Paper presented at the 2025 ACPA: the 11th Asian-Australasian Conference on Precision Agriculture, October 14-16, 2025, Chiayi, Taiwan.
15. Tung, C. J., Wu, Y. H., Lee, S. Y. & **Kuo, Y. F.** (2025). Application of deep learning in counting and gender identification of parasitoid wasps: a case study of *Trissolcus* sp. (Hymenoptera: Scelionidae). Paper presented at the 2025 ASABE AIM: the 2025 American Society of Agricultural and Biological Engineers Annual International Meeting, July 13-16, 2025, Toronto, ON, Canada.
16. Chu Wang, W. L., Lin, E. C., & **Kuo, Y. F.** (2025). Automated detection of farrowing events in commercial pig farms using deep learning. Paper presented at the 2025 ASABE AIM: the 2025 American Society of Agricultural and Biological Engineers Annual International Meeting, July 13-16, 2025, Toronto, ON, Canada.
17. Chang, K. R., & **Kuo, Y. F.** (2025). Monitoring chicken farms using smart rail surveillance system and deep learning. Paper presented at the 2025 ASABE AIM: the 2025 American Society of Agricultural and Biological Engineers Annual International Meeting, July 13-16, 2025, Toronto, ON, Canada.
18. Chiang, C. E., Huang, H. H., Lin, E. C., & **Kuo, Y. F.** (2024). A pig foot detection and tracking approach for gait evaluation. Paper presented at the 2024 ISMAB: the 11th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, September 27-29, 2024, Bali, Indonesia.
19. Chu Wang, W. L., & **Kuo, Y. F.** (2024). Automated identification of defective native Taiwanese chicken using convolutional neural networks. Paper presented at the 2024 ISMAB: the 11th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, September 27-29, 2024, Bali, Indonesia.
20. Chang, K. R., & **Kuo, Y. F.** (2024). Development of a ceiling suspended system for chicken monitoring using deep learning. Paper presented at the 2024 ISMAB: the 11th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, September 27-29, 2024, Bali, Indonesia.
21. Yen, W. F., Gao, W. C., Dai, Y. L., Lin, C. P., Huang, J. H., & **Kuo, Y. F.** (2024). Performance comparison between classification and object detection approaches in Cucurbitaceae pests, diseases, and disorder identification. Paper presented at the 2024 ISMAB: the 11th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, September 27-29, 2024, Bali, Indonesia.
22. Yang, P. C., Lee, C. M., & **Kuo, Y. F.** (2024). Wood species identification using deep learning and LINE Bot. Paper presented at the 2024 ISMAB: the 11th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, September 27-29, 2024, Bali, Indonesia.
23. Lin, Y., Gao, W. C., Lin, C. P., Tsai, H. J., Chen, Y. J., & **Kuo, Y. F.** (2024). Automated identification of tomato pests, diseases, and disorders using convolutional neural networks.

Paper presented at the 2024 ASABE AIM: the 2024 American Society of Agricultural and Biological Engineers Annual International Meeting, July 28-31, 2024, Anaheim, CA, USA.

24. Lee, C. C., **Kuo, Y. F.**, & Chu, Y. N. (2024). Quantifying feeding-related characteristic of shrimp using deep learning. Paper presented at the 2024 ASABE AIM: the 2024 American Society of Agricultural and Biological Engineers Annual International Meeting, July 28-31, 2024, Anaheim, CA, USA.
25. Hsieh, P. C., Lin, E. C., & **Kuo, Y. F.** (2024). Observing behaviors of weaning piglets in nursery house using convolutional neural networks. Paper presented at the 2024 ASABE AIM: the 2024 American Society of Agricultural and Biological Engineers Annual International Meeting, July 28-31, 2024, Anaheim, CA, USA.
26. Hsieh, Y. L., & **Kuo, Y. F.** (2024). Edge solution for automatically monitoring the dispersion and movement of chicken flocks using machine vision. Paper presented at the 2024 CIGR International Conference: the 6th Commission Internationale du Génie Rural International Conference, May 19-23, Jeju, Korea.
27. Lai, S. C., Lee, C. M., & **Kuo, Y. F.** (2024). Wood identification using cross-section images and convolutional neural networks. Paper presented at the 2024 CIGR International Conference: the 6th Commission Internationale du Génie Rural International Conference, May 19-23, Jeju, Korea.
28. Tsai, J., Tsai, Y. C., Liu, L. Y., & **Kuo, Y. F.** (2024). Automatic crop identification using farmland images and deep learning. Paper presented at the 2024 CIGR International Conference: the 6th Commission Internationale du Génie Rural International Conference, May 19-23, Jeju, Korea.
29. Yen, W. F., Gao, W. C., Dai, Y. L., Lin, C. P., & **Kuo, Y. F.** (2024). Gourd pests, diseases, and disorders identification using deep learning and LINE Bot. Paper presented at the 2024 CIGR International Conference: the 6th Commission Internationale du Génie Rural International Conference, May 19-23, Jeju, Korea.
30. Chiang, C. E., Huang, H. H., Lin, E. C., & **Kuo, Y. F.** (2024). A lameness detection system by tracking leg keypoints of pigs using CNN. Paper presented at the 2024 CIGR International Conference: the 6th Commission Internationale du Génie Rural International Conference, May 19-23, Jeju, Korea.
31. Chen, B. L., & **Kuo, Y. F.** (2023). Early warning system for open-beaked ratio, spatial dispersion, and movement of chicken using CNNs. Paper presented at the 2023 ASABE AIM: the 2023 American Society of Agricultural and Biological Engineers Annual International Meeting, July 9-12, Omaha, NE, USA.
32. Lai, P. C., & **Kuo, Y. F.** (2023). Detecting carcass defects of native chickens using convolutional neural networks. Paper presented at the 2023 ASABE AIM: the 2023 American Society of Agricultural and Biological Engineers Annual International Meeting, July 9-12, Omaha, NE, USA.
33. Kuo, T. C., Chen, S. P., & **Kuo, Y. F.** (2022). Automatically detecting scale insects using deep convolutional neural network. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
34. Hsieh, F. C., Lin, M. J., & **Kuo, Y. F.** (2022). Quantifying virus resistance level of plants using convolutional neural network. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
35. Chiu, T. W., Wu, H. Y., Lai, Q. J., Chung, P. C., & **Kuo, Y. F.** (2022). Strawberry diseases and pests identification using convolutional neural networks and LINE bot. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
36. Cheng, T. H., Chen, B. L., & **Kuo, Y. F.** (2022). Development of embedded system for chicken monitoring using deep learning. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
37. Lin, Y., Dai, Y. L., Lin, C. P., Huang, J. H., & **Kuo, Y. F.** (2022). Identifying tomato pests and diseases in Fields through LINE bot and deep learning. Paper presented at the 2022 CIGR

World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.

38. Chen, B. L., & **Kuo, Y. F.** (2022). Early warning system for monitoring chicken using convolutional neural networks. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
39. Lai, P. C., & **Kuo, Y. F.** (2022). Identifying damaged native chicken carcasses for automatic graded using deep learning. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
40. Yeh, Y. H., & **Kuo, Y. F.** (2022). Designing an autonomous cruising robot in commercial chicken farm. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
41. Tsai, Y. J., Lin, E. C., & **Kuo, Y. F.** (2022). An automatic system for monitoring lactation-related behaviors of sows and piglets using CNNs. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
42. Chang, K. R., Shih, F. P., Hsieh, M. K., Hsieh, K. W., & **Kuo, Y. F.** (2022). Analyzing chicken movement under various temperature using deep convolutional neural networks. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
43. Huang, Y. C., Huang, H. H., Lin, E. C., & **Kuo, Y. F.** (2022). Tracking leg keypoints of gilts using convolutional neural networks. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
44. Ma, T. H., Lu, C. Y., Shiao, J. C., Chang, Y. J., & **Kuo, Y. F.** (2022). Automated fish age estimation of pacific bluefin tuna using deep learning with multitasks. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
45. Hsu, H. C., Yeh, K. T., Chang, K. R., Lee, C. M., & **Kuo, Y. F.** (2022). Identification of Taiwan hinoki and meniki woods using convolutional neural networks and wood cross-section images. Paper presented at the 2022 CIGR World Congress: the 20th Commission Internationale du Génie Rural World Congress, December 6-9, Kyoto, Japan.
46. Liao, J. K., & **Kuo, Y. F.** (2022). Wood species identification in family Lauraceae using deep learning. Paper presented at the 2022 ISMAB: the 10th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, November 15-17, Kaohsiung, Taiwan.
47. Hsieh, P. C., & **Kuo, Y. F.** (2022). Automatically detecting piglet keypoints using convolutional neural networks. Paper presented at the 2022 ISMAB: the 10th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, November 15-17, Kaohsiung, Taiwan.
48. Lee, C. C., & **Kuo, Y. F.** (2022). Automatically estimating shrimp feed residue using CNN and an underwater imaging system. Paper presented at the 2022 ISMAB: the 10th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, November 15-17, Kaohsiung, Taiwan.
49. Chang, K. R., Shih, F. P., Hsieh, M. K., Hsieh, K. W., & **Kuo, Y. F.** (2022). Analyzing chicken activity level under heat stress condition using deep convolutional neural networks. Paper presented at 2022 ASABE AIM: the 2022 American Society of Agricultural and Biological Engineers Annual International Meeting, July 17-20, Houston, TX, USA.
50. Cheng, H. H., Dai, Y. L., Lin, C. P., Huang, J. H., Chen, S. F., & **Kuo, Y. F.** (2021). Identifying tomato diseases from leave images using deep convolutional neural networks. Paper presented at 2021 ASABE AIM: the 2021 American Society of Agricultural and Biological Engineers Annual International Meeting, July 12-16, 2021, Virtual.
51. Tseng, C. H., & **Kuo, Y. F.** (2019) Detecting and counting harvested fish and measuring fish body lengths in video using deep learning methods. Paper presented at 2019 ASABE AIM: the

2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.

52. Lu, Y. C., & **Kuo, Y. F.** (2019) Identifying species of common sea fish harvested by longliner using deep convolutional neural networks. Paper presented at 2019 ASABE AIM: the 2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.
53. Lu, J. Y., Chang, C. L., & **Kuo, Y. F.** (2019) Monitoring growth rate of lettuce using deep convolutional neural networks. Paper presented at 2019 ASABE AIM: the 2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.
54. Huang M. H., Lin, E. C., & **Kuo, Y. F.** (2019) Determining the body condition scores of sows using convolutional neural networks. Paper presented at 2019 ASABE AIM: the 2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.
55. Lin, H. Y., Chen, S. Y., Chung, C. L., & **Kuo, Y. F.** (2019) Counting bacterial colony on agar plates using deep convolutional neural network. Paper presented at 2019 ASABE AIM: the 2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.
56. Cheng, H. H., Ke, Y. L., Lin, C. P., Huang, J. H., Chen, S. F., & **Kuo, Y. F.** (2019) Identifying and localizing the disease spots of late blight on tomato leaves using deep convolutional neural networks. Paper presented at 2019 ASABE AIM: the 2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.
57. Lin, H. Y., Lee, H. C., Ng, W. L., Pai, J. N., Chu, Y. N., Liou, C. H., Liao, K. C., & **Kuo, Y. F.** (2019) Estimating shrimp body length using deep convolutional neural network. Paper presented at 2019 ASABE AIM: the 2019 American Society of Agricultural and Biological Engineers Annual International Meeting, July 7-10, 2019, Boston, MA, USA.
58. Lin, C. Y., Hsieh, K. W., Tsai, Y. C., & **Kuo, Y. F.** (2018). Monitoring chicken heat stress using deep convolutional neural networks. Paper presented at 2018 ASABE AIM: the 2018 American Society of Agricultural and Biological Engineers Annual International Meeting, July 29 - August 1, 2018, Detroit, MI, USA.
59. Yang, H. W., Hsu, H. C., Yang, C. K., Tsai, M. J., & **Kuo, Y. F.** (2018). Discriminating morphologically similar species in Genus Cinnamomum (Lauraceae) using machine vision. Paper presented at 2018 ASABE AIM: the 2018 American Society of Agricultural and Biological Engineers Annual International Meeting, July 29 - August 1, 2018, Detroit, MI, USA.
60. Hsieh, K. Y., Ho, C. K., & **Kuo, Y. F.** (2018). Detecting and counting soybean aphids using convolutional neural network. Paper presented at 2018 ASABE AIM: the 2018 American Society of Agricultural and Biological Engineers Annual International Meeting, July 29 - August 1, 2018, Detroit, MI, USA.
61. Lin, T. Y., & **Kuo, Y. F.** (2018). Cat face recognition using deep learning. Paper presented at 2018 ASABE AIM: the 2018 American Society of Agricultural and Biological Engineers Annual International Meeting, July 29 - August 1, 2018, Detroit, MI, USA.
62. Wang, Y. H., Hsu, H. C., Chou, W. C., & **Kuo, Y. F.** (2018). Automatically identifying floral contours and vascular bundles in 3D images. Paper presented at 2018 ASABE AIM: the 2018 American Society of Agricultural and Biological Engineers Annual International Meeting, July 29 - August 1, 2018, Detroit, MI, USA.
63. Hung, T. T., Hsu, H. C., & **Kuo, Y. F.** (2018) Quantifying and clustering texture traits in flowers of genus Sinningia. Paper presented at the 2018 ISMAB: the 9th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 28-30, 2018, Jeju, Korea.
64. Tseng, C. H., Hsieh, C. L., & **Kuo, Y. F.** (2018) Detecting fish in images with complex background and estimating body length using convolutional neural network. Paper presented at the 2018 ISMAB: the 9th International Symposium on Machinery and Mechatronics for

Agriculture and Biosystems Engineering Annual International Meeting, May 28-30, 2018, Jeju, Korea.

65. Hsu, H. C., Lee, C. H., Yang, C. K., Chu, F. H., Tsai, M. J., & **Kuo, Y. F.** (2018) Classifying endemic Fagaceae species in Taiwan using leaf images. Paper presented at the 2018 ISMAB: the 9th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 28-30, 2018, Jeju, Korea.
66. Lu, Y. C., Hsieh, C. L., & **Kuo, Y. F.** (2018) Automatic fish species identification using convolutional neural networks. Paper presented at the 2018 ISMAB: the 9th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 28-30, 2018, Jeju, Korea.
67. Han, T. H., & **Kuo, Y. F.** (2017) Three-dimensional phenotype quantitative system of seeding root. Paper presented at 2017 ASABE AIM: the 2017 American Society of Agricultural and Biological Engineers Annual International Meeting, July 16-19, 2017, Spokane, WA, USA.
68. Chou, W. C., Hsu, H. C., & **Kuo, Y. F.** (2017) Studying floral shape variations inn 3D for genus Sinningia. Paper presented at 2017 ASABE AIM: the 2017 American Society of Agricultural and Biological Engineers Annual International Meeting, July 16-19, 2017, Spokane, WA, USA.
69. Tung, C., Hsieh, C. L., & **Kuo, Y. F.** (2017) Sea fish identification using convolutional neural network. Paper presented at 2017 ASABE AIM: the 2017 American Society of Agricultural and Biological Engineers Annual International Meeting, July 16-19, 2017, Spokane, WA, USA.
70. Hsu, H. C., Chou, W. C., & **Kuo, Y. F.** (2016) Understanding floral shape variation in Sinningia: utilizing a 3D geometric morphometric approach. Paper presented at the 2016 ISMAB: the 8th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 23-25, 2016, Niigata, Japan.
71. Han, T. H., & **Kuo, Y. F.** (2016) Three-dimensional image reconstruction system of rice seedling root. Paper presented at the 2016 ISMAB: the 8th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 23-25, 2016, Niigata, Japan.
72. Tung, C., Lin, C. H., & **Kuo, Y. F.** (2016) Studying the tidal breathing patterns of obese and non-obese cats. Paper presented at the 2016 ISMAB: the 8th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 23-25, 2016, Niigata, Japan.
73. Hsu, K. L., Chan, C. Y., Hsu, H. C., Wang, C. N., & **Kuo, Y. F.** (2016) Quantifying color and texture patterns in flowers of Sinningia speciosa. Paper presented at the 2016 ISMAB: the 8th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 23-25, 2016, Niigata, Japan.
74. Chou, W. C., Hsu, H. C., & **Kuo, Y. F.** (2016) Illustrating the ancestor flower shapes of clade Corytholoma in genus Sinningia. Paper presented at the 2016 ISMAB: the 8th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 23-25, 2016, Niigata, Japan.
75. Liang, C. H., Hsu, H. C., Wang, C. N., & **Kuo, Y. F.** (2016) Automatic detection of floral lobe contour in 3D image. Paper presented at the 2016 ISMAB: the 8th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering Annual International Meeting, May 23-25, 2016, Niigata, Japan.
76. Hung, K. J., Chen, S. Y., Chen, Y. C., Lai, M. H., Chung, C. L. & **Kuo, Y. F.** (2015). Image based approach to detect Bakanae disease on rice seedlings. Paper presented at 2015 ASABE AIM: the 2015 American Society of Agricultural and Biological Engineers Annual International Meeting, July 26-29, 2015, New Orleans, LA, USA.
77. Kuo, T. Y., Chen, S. Y., Lin, H. A., Chung, C. L., & **Kuo, Y. F.*** (2015). Identifying rice grains of various cultivars using machine vision. Paper presented at 2015 ASABE AIM: the 2015 American Society of Agricultural and Biological Engineers Annual International Meeting, July 26-29, 2015, New Orleans, LA, USA.

78. Wang C. C., Hsu, H. C., Wang, C. N., & **Kuo, Y. F.** (2015). Morphological integration between floral petals for Sinningia speciosa. Paper presented at 2015 ASABE AIM: the 2015 American Society of Agricultural and Biological Engineers Annual International Meeting, July 26-29, 2015, New Orleans, LA, USA.
79. Chou, T. H., Ho, C. S., & **Kuo, Y. F.** (2015). QR code detection using convolutional neural networks. Paper presented at the ARIS 2015: the 2015 International Conference on Advanced Robotics and Intelligent Systems, May 29-31, 2015, Taipei, Taiwan.
80. Chen, W. T., & **Kuo, Y. F.** (2014). Detecting bran residue distribution on rice surface using fluorescence imaging. Paper presented at 2014 ASABE AIM: the 2014 American Society of Agricultural and Biological Engineers Annual International Meeting, July 13-16, 2014, Montreal, Quebec, Canada.
81. Lee, T. K., **Kuo, Y. F.**, Hsu, H. C., Lin, T. T., & Wang, C. N. (2014). Three-dimensional shape variation analysis on Sinningia speciosa flowers. Paper presented at 2014 ASABE AIM: the 2014 American Society of Agricultural and Biological Engineers Annual International Meeting, July 13-16, 2014, Montreal, QC, Canada.
82. Chien, C. L., **Kuo, Y. F.**, & Chen, D. R. (2014). Developing a computer aided diagnosis system for classification of malignant breast tumor grade in ultrasound imaging. Paper presented at the 2014 ISMAB: the 7th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, May 21-23, 2014, Yilan, Taiwan.
83. Hsu, P. T., Chen, D., **Kuo, Y. F.**, & Lin, T. T. (2014). Building a robot for the 2013 field robot competition. Paper presented at the 2014 ISMAB: the 7th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, May 21-23, 2014, Yilan, Taiwan.
84. Huang, K. J., Chen, Y. J., Chen, S. Y., **Kuo, Y. F.**, & Chung, C. L. (2014). Classification of foolish seedling disease for rice plants. Paper presented at the 2014 ISMAB: the 7th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, May 21-23, 2014, Yilan, Taiwan.
85. Tsou, Y., Hsu, H. C., Wang, C. C., **Kuo, Y. F.**, Wang, C. N., & Moller, M. (2014). Quantification of floral shape variation in the F2 hybrids of two Streptocarpus species with contrasting pollination syndrome. Paper presented at the 2014 ISMAB: the 7th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, May 21-23, 2014, Yilan, Taiwan.
86. Yeh, Y. H. F., Chung, W. C., Lee, R. S., Liao, J. Y., Chung, C. L., **Kuo, Y. F.**, & Lin, T. T. (2014). Characteristic wavelength selection of hyperspectral images for plants disease analyses. Paper presented at the 2014 ISMAB: the 7th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, May 21-23, 2014, Yilan, Taiwan.
87. Chen, W. T., & **Kuo, Y. F.** (2013). Measurement of degree of milling for rice using hyperspectral imaging. Paper presented at 2013 ASABE AIM: the 2013 American Society of Agricultural and Biological Engineers Annual International Meeting, July 21-24, 2013, Kansas City, MO, USA.
88. **Kuo, Y. F.**, Weng, L. K., Lee, T. K., Hsu, H. C., Lin, T. T., & Wang, C. N. (2013). Quantitative evaluation of the floral shape variation in Sinningia speciosa domestication. Paper presented at the 2013 ASABE AIM: the 2013 American Society of Agricultural and Biological Engineers Annual International Meeting, July 21-24, 2013, Kansas City, MO, USA.
89. Thai, C. N., **Kuo, Y. F.**, & Yen, P. L. (2013). Cooperative teaching in a distance education environment. Paper presented at the 120th ASEE Annual Conference and Exposition, June 23-26, 2013, Atlanta, GA, USA.
90. Yeh, Y. H. F., Chung, W. C., Liao, J. Y., Chung, C. L., **Kuo, Y. F.**, & Lin, T. T. (2013). A comparison of machine learning methods on hyperspectral plant disease assessments. Paper presented at the 2013 IFAC Bio Robotics Conference, March 27-29, 2013, Sakai, Japan.
91. **Kuo, Y. F.**, Chiu, G. T. C., Kerby, G. H., Trask, J. L., Yih, Y., & Allebach, J. P. (2012). An adaptive model-based approach to reduce calibration frequency while maintaining tone

consistency for color electrophotography. Paper presented at NIP28: the 28th International Conference on Digital Printing Technologies, September 9-13, 2012, Quebec City, QC, Canada.

92. Yang, C. L., **Kuo, Y. F.**, Yih, Y., Chiu, G. T. C., & Allebach, J. P. (2012). Cartridge clustering for improving tone prediction accuracy in calibration for color electrophotography. Paper presented at NIP28: the 28th International Conference on Digital Printing Technologies. September 9-13, 2012, Quebec City, QC, Canada.
93. Yang, C. L., Hari, Y., & **Kuo, Y. F.** (2012). Multiple crop scheduling for plant factory. Paper presented at the 2012 ISMAB: the 6th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, June 18-20, 2012, Jeonju, Korea.
94. Wang, C. Y., Chung, W. C., Liao, J. Y., Chung, C. L., **Kuo, Y. F.**, & Lin, T. T. (2012). Strawberry Anthracnose disease assessment using hyperspectral imaging. Paper presented at the 2012 ISMAB: the 6th International Symposium on Machinery and Mechatronics for Agriculture and Biosystems Engineering, June 18-20, 2012, Jeonju, Korea.
95. **Kuo, Y. F.**, Chiu, G. T. C., Yih, Y., & Allebach, J. P. (2011). Calibration color patch reduction for electrophotography. Paper presented at NIP27: the 27th International Conference on Digital Printing Technologies and Digital Fabrication, October 2-6, 2011, Minneapolis, MN, USA.
96. **Kuo, Y. F.**, Yang, C. L., Yih, Y., Allebach, J. P., & Chiu, G. T. C. (2009). Improving tone prediction accuracy in calibration for color Electrophotography part II – principal component regression. Paper presented at NIP25: the 25th International Conference on Digital Printing Technologies and Digital Fabrication, September 20-24, 2009, Louisville, KY, USA.
97. Yang, C. L., **Kuo, Y. F.**, Yih, Y., Chiu, G. T. C., Abramsohn, D., Ashton, G., & Allebach, J. P. (2009). Improving tone prediction accuracy in calibration for color Eelectrophotography part I – environmental and consumable factors. Paper presented at NIP25: the 25th International Conference on Digital Printing Technologies and Digital Fabrication, September 20-24, 2009, Louisville, KY, USA.
98. **Kuo, Y. F.**, Yang, C. L., Yih, Y., Allebach, J. P., & Chiu, G. T. C. (2009). Modeling of tone deviation during switch on transient for color Electrophotography. Paper presented at NIP25: the 25th International Conference on Digital Printing Technologies and Digital Fabrication, September 20-24, 2009, Louisville, KY, USA.
99. **Kuo, Y. F.**, Whitaker, D., Chiu, G. T. C., & Alleman. J. E. (2005). System level design and initial equivalent system mass analysis of a solid phase thermophilic aerobic rector for advanced life support systems. Paper presented at the 2005 ICES: the 35th International Conference on Environmental Systems, July 11-14, 2005, Rome, Italy.

Book Chapters

1. Chang, K. R., Lee, C. C., Hsieh, Y. L., Hsieh, P.-C., & **Kuo, Y. F.** (2024). Strategic short note: application of smart machine vision in aquaculture and animal husbandry. In *IoT and AI in Agriculture: Smart Automation Systems for Increasing Agricultural Productivity to Achieve SDGs and Society 5.0* (pp. 447-451). Singapore: Springer Nature Singapore.
2. Chang, K. R., Ma, T. H., & **Kuo, Y. F.** (2023). Strategic short note: application of smart machine vision in agriculture, forestry, fishery, and animal husbandry. In *IoT and AI in Agriculture: Self-sufficiency in Food Production to Achieve Society 5.0 and SDG's Globally* (pp. 125-131). Singapore: Springer Nature Singapore.
3. Chen, S. F., & **Kuo, Y. F.** (2022). Artificial intelligence for image processing in agriculture. In *Sensing, Data Managing, and Control Technologies for Agricultural Systems* (pp. 159-183). Cham: Springer International Publishing.

THESIS/DISSERTATION SUPERVISION COMPLETED

1. Chang, K. R. (July 2025) Monitoring chicken house using rail surveillance system and deep learning.
2. Yang, P. C. (July 2025) Wood identification using smartphone images and deep neural network.

3. Lin, Y. (June 2024) Automated identification of tomato diseases, pests, and disorders using multiple deep learning models and smartphones.
4. Hsieh, P. C. (June 2024) Observing behaviors of weaning piglets in nursery using convolutional neural networks.
5. Lee, C. C. (June 2024) Quantifying feeding-related characteristics of shrimp using deep learning.
6. Lai, P. C. (July 2023) Detecting carcass defects of native chickens using convolutional neural networks.
7. Chen, B. L. (July 2023) Early warning system for open-beak behavior, spatial dispersion, and movement of chickens using convolutional neural networks.
8. Yeh, K. T. (July 2022) Wood species identification using cross-section images and convolutional neural network.
9. Yeh, Y. H. (June 2022) Designing an autonomous cruising robot in commercial chicken farm.
10. Tsai, Y. J. (June 2022) Monitoring the behaviors related to lactating of sow and her piglets in farrowing crates using CNNs.
11. Hsu, H. C. (Aug 2021) Analyses of the 3D corolla shape and the 2D nectar guide pattern on petals in the subtribe Ligeriinae (Gesneriaceae).
12. Lin, H. Y. (June 2021) Automatically identifying fish species and estimating fish body length using convolutional neural networks.
13. Cheng, H. H. (June 2021) Identifying tomato diseases and pests using convolutional neural networks and a chatbot.
14. Ho, K. Y. (Jan 2021) Automatic recognizing lactating behaviors of sows and tracking of piglets in farrowing houses using convolutional neural networks.
15. Nien, S. Y. (July 2020) Automatic detecting the activity levels of chickens in commercial chicken farm using deep convolutional neural networks.
16. Wu, T. Y. (July 2020) Identifying Fagaceae and Lauraceae species using leaf images and convolutional neural networks.
17. Hung. T. T. (October 2019) Quantifying color and variegated patterns of petals in Sinningia.
18. Tseng, C. H. (July 2019) Detecting and counting harvested fish and measuring fish body lengths in EMS videos using deep convolutional neural networks.
19. Lu, Y. C. (July 2019) Identifying species of common sea fish harvested by longliner using deep convolutional neural networks.
20. Wang, Y. H. (July 2018) Automatic detection of vascular bundles and corolla contour in 3D floral image.
21. Yang, H. W. (July 2018) Discriminating morphologically similar species in genus Cinnamomum (Lauraceae) using deep convolutional neural networks.
22. Lin, C. Y. (July 2018) Monitoring chicken activity and temperature-humidity index using deep convolutional neural networks.
23. Lin, T. Y. (July 2018) Cat face recognition using deep learning.
24. Han, T. H. (July 2017) Developing a system for quantifying root traits of rice seedlings in 3D.
25. Hsu, K. L. (July 2017) Quantifying color and spot characteristics for the ventral petals in Sinningia speciosa.
26. Tung, C. (July 2017) Development of an imaging approach for automatic fish identification.
27. Chou, W. C. (July 2017) 3D floral shape variation and ancestral floral shape reconstruction for genus Sinningia.
28. Liang, C. H. (July 2016) Studying petal shape variations of Sinningia speciosa using micro-CT: a crossed line of actinomorphic and zygomorphic flowers.
29. Kuo, T. Y. (January 2016) Identifying rice grains of various varieties and studying the genotype-phenotype association of rice grains.
30. Huang, K. J. (July 2015) Detecting Bakanae disease in rice seedlings by using machine vision.
31. Wang, C. C. (July 2015) Three-dimensional approach for quantifying and analyzing floral shape variation in Sinningia speciosa.

32. Chou, T. H. (July 2015) Barcode localization using convolutional neural networks.
33. Chen, W. T. (July 2014) Observation and measurement of residual bran on milled rice surface using hyperspectral imaging and fluorescence imaging.
34. Lee, T. K. (July 2014) Shape variation analysis on Sinningia speciosa flowers using geometric morphometrics.
35. Chien, C. L. (July 2014) Computer-aided diagnosis system for breast cancer diagnosis and tumor grade classification in 3D ultrasound image.

TEACHING

National Taiwan University

BME 1107: **Principles and Applications of Microcontrollers**

BME 1202: **Machinery and Agriculture**

BME 3112: **Principles and Applications of Sensors**

BME 5939: **Introduction to Data Science**

BME 5120: **Introductory Applied Machine Learning**

BME 5121: **Special Topic on Robotics**